



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,617	12/05/2003	Masataka Suzuki	06753.0571	7892

22852 7590 12/16/2005

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER  
LLP  
901 NEW YORK AVENUE, NW  
WASHINGTON, DC 20001-4413

EXAMINER

HOFFBERG, ROBERT JOSEPH

ART UNIT PAPER NUMBER

2835

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

✓

<b>Office Action Summary</b>	<b>Application No.</b> 10/727,617	<b>Applicant(s)</b> SUZUKI ET AL.	
	<b>Examiner</b> Robert J. Hoffberg	<b>Art Unit</b> 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/24/04 12/30/04 8/3/05</u> | 6) <input type="checkbox"/> Other: _____  |

***Detailed Action***

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Chobot et al. (US 5,743,004).

With respect to Claim 1, Chobot et al. teaches a mounting structure for an electronic component (Fig. 10, #23), comprising: a wiring circuit board (Col. 1, line 11) having one face serving as a component mount surface and the other face serving as a solder-dip surface; a wiring portion (Fig. 9, upper and lower surfaces of wiring circuit board) formed on at least one of the component mount surface and the solder-dip surface of the wiring circuit board; a through-holed portion (Fig. 9, #33 and Fig. 11, #40) extending through the wiring circuit board and connected to be electrically conductive with the wiring portion (see Fig. 9); a heat conducting apertured portion extending through the wiring circuit board (Fig. 9, wall of #33) and connected to be electrically conductive with the wiring portion, the heat conducting apertured portion being formed in the vicinity (see Fig. 9) of the through-holed portion; and a lead portion (Fig. 9, #26) of the electronic component inserted to the through-holed portion from the component mount surface and soldered (Fig. 10, #21) to the wiring circuit board.

With respect to Claim 2, Chobot et al. further teaches a heat collector portion (Fig. 9, upper surface of wiring circuit board) extending from an end of the heat conducting apertured portion on the solder-drip surface, the heat collector portion being made of metal (Col. 2, line 17, electrically conductive material plated).

With respect to Claim 3, Chobot et al. further teaches wherein the heat collector portion is connected (see Fig. 9, #33) to be electrically conductive with an end of the through-holed portion on the solder-dip surface.

With respect to Claim 4, Chobot et al. further teaches wherein the heat conducting apertured portion is formed in a via hole (Col. 2, line 10).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chobot et al. (US 5,743,004).

With respect to Claims 5-7, Chobot et al. further teaches the edge distance between the via hole or holes and the through-hole being approximately 1 mm (see Fig. 2 and Col.4, lines 18-25). While Chobot et al. fails to teach the location of the holes in relationship to wiring portion, it would have been obvious to one of ordinary skill in the art at the time of the invention was made modify the mounting structure of Chobot et al.

to locate the via hole or holes in the center, widthwise, longitudinal or any other position to allow the heat to be retained long enough to permit a good solder joint.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Estes et al. (US 5,451,720), Chamberlin et al. (US 6,235,994) and Yamaguchi (US 2004/0042180) teach thermal vias to improve the soldering process. Kametani et al. (US 5,590,030), Roessler et al. (US 6,212,071), Tanimura et al. (US 6,441,312) and Kramer et al. (US 6,574,108) teach thermal vias to dissipate heat. Herman et al. (US 6,181,551), Brinthaup et al. (US 6,521,842) and Honda et al. (6,849,805) teach using wiring portions on or in the wiring circuit board to improve the soldering process.

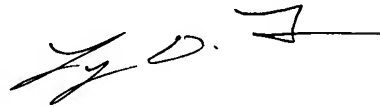
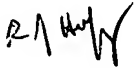
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2835

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH



LYNN FEILD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800